

CLAIMS

What is claimed is:

1. A method of isolating a stress-regulated nucleic acid sequence of interest, said method comprising:
 - isolating plant material;
 - inducing stress adaptation in said isolated plant material by application of a sublethal stress;
 - identifying differential expression of a sequence between stress-adapted and nonadapted plant material; and
 - isolating a differentially expressed sequence of interest.
2. The method according to claim 1, wherein said induction of stress adaptation is produced by a methyl viologen pretreatment or treatment.
3. The method according to claim 1, wherein said isolated plant material is tobacco leaf material.
4. The method according to claim 1, wherein isolating said differentially expressed sequence is at least partly performed by amplifying said differentially expressed sequence by PCR.
5. The method according to claim 1, wherein said differentially expressed sequence of interest is a nucleic acid sequence.
6. An isolated nucleic acid comprising a nucleic acid encoding the polypeptide sequence set forth in SEQ ID NO:169.
7. A sequence of interest, produced by a process comprising:
 - isolating plant material;
 - inducing stress adaptation in said isolated plant material by application of a sublethal stress;

identifying differential expression of a sequence between stress-adapted and nonadapted plant material; and
isolating said differentially expressed sequence.

8. The sequence of interest of claim 7, wherein said differentially expressed sequence is selected from the group of sequences consisting of SEQ ID NO:1 to SEQ ID NO:167.

9. The sequence of interest of claim 7, wherein said differentially expressed sequence encodes a protein comprising SEQ ID NO:169.

10. The sequence of interest of claim 7, wherein said differentially expressed sequence comprises SEQ ID NO:168.

11. A method of modulating plant stress tolerance, said method comprising;
isolating plant material;
inducing stress adaptation in said isolated plant material by application of a sublethal stress;
identifying differential expression of a sequence between stress-adapted and nonadapted plant material;
isolating a differentially expressed sequence, or a sequence of interest that is at least 60% identical to said differentially expressed sequence,
introducing said differentially expressed sequence into a vector;
introducing said vector into a plant cell; and
expressing said differentially expressed sequence, thereby modulating plant stress tolerance.

12. The method according to claim 11, wherein said differentially expressed sequence is selected from the group of sequences consisting of SEQ ID NO:1 to SEQ ID NO:167.

13. The method according to claim 11, wherein said differentially expressed sequence encodes a protein comprising SEQ ID NO:169.

14. The method according to claim 11, wherein said differentially expressed sequence comprises SEQ ID NO:168.

15. The method according to claim 11, further comprising:
identifying a genomic DNA sequence corresponding to a 5' end of said differentially expressed sequence; and
identifying a promoter sequence in said genomic DNA.

16. The method according to claim 12, further comprising:
identifying a full length cDNA sequence for said differentially expressed sequence.

17. The method according to claim 11, wherein said sequence of interest is 90% identical to said differentially expressed sequence.

18. The sequence of interest of claim 7, further comprising:
identifying genomic DNA corresponding to a 5' end of said differentially expressed sequence; and
identifying a promoter sequence in said genomic DNA.

19. The method according to claim 11, wherein stress adaptation is induced by a methyl viologen pretreatment or treatment.

20. The method according to claim 11, wherein said isolated plant material is tobacco.

21. The sequence of interest of claim 7, further comprising inserting said differentially expressed sequence of interest into a vector.

22. The method according to claim 11, further comprising introducing said differentially expressed sequence of interest into a vector and introducing said vector into a plant cell, thereby producing a plant cell having increased stress tolerance.

23. A plant comprising the plant cell of claim 22.